CLAIMS

1. A method of producing microstructure which comprises a step of making pores in a substrate to become a mold by irradiation with a focused energy beam and a step of growing a microstructure in the thus made pores.

2. The method of producing microstructure as defined in Claim 1, wherein said energy beam is an ion beam, electron beam, or laser beam.

3. The method of producing microstructure as defined in Claim 2, wherein said energy beam is one which is containing metal ions, such as Ga^{+}, Si^{+}, Si^{++}, Be^{+}, Be^{++}, Au^{+}, and Au^{++} or gaseous ions, such as H^{+} and He^{+}.

4. The method of producing microstructure as defined in Claim 1, wherein said pores have a diameter no larger than 100 nm.

5. The method of producing microstructure as defined in Claim 2, wherein said ion beam is irradiated in such a way that the position of irradiation is within an error of ±5 nm.

6. The method of producing microstructure as defined in Claim 5, wherein said pores are made at intervals of 100 nm and in any array pattern.

7. The method of producing microstructure as defined in Claim 1, wherein said microstructure is grown

in a gas phase, liquid phase, or solid phase.

8. The method of producing microstructure as defined in Claim 1, wherein said microstructure is grown from a catalyst substance which has been attached to the bottom of the previously made pores.

9. The method of producing microstructure as defined in Claim 8, wherein said catalyst substance is precipitated at the bottom of the pores by irradiating the previously made pores with a focused energy beam in an atmosphere of a gas as a raw material of the catalyst.

10. The method of producing microstructure as defined in Claim 9, wherein the gas as a raw material of the catalyst is a metal gas of iron, nickel, cobalt, tungsten, molybdenum, gold, or the like.

11. The method of producing microstructure as defined in Claim 10, wherein the metal gas is any of $Fe(CO)_5$, $Ni(CO)_4$, WF_6, $W(CO)_6$, $Mo(CO)_6$, $Au(CH_3)_2$, and $Al(CH_3)_2$.

12. The method of producing microstructure as defined in Claim 8, wherein said catalyst substance is electrochemically precipitated at the bottom of the previously made pores.

13. The method of producing microstructure as defined in Claim 1, wherein said microstructure is one

which is grown one-dimensionally.

14. The method of producing microstructure as defined in Claim 13, wherein said one-dimensional microstructure is carbon nanotube or metal nanowire.

15. The method of producing microstructure as defined in Claim 1, wherein said microstructure is obtained in such a form as to fill the pore.

16. The method of producing microstructure as defined in Claim 1, wherein said microstructure is obtained in such a form as to fill the pore and then it is removed from the pore.

17. A method of producing a mold which comprises a step of making pores by irradiating a substrate to become a mold with a focused energy beam.

18. The method of producing a mold as defined in Claim 17, wherein said energy beam is an ion beam, electron beam, or laser beam.

19. The method of producing a mold as defined in Claim 18, wherein said energy beam is one which is formed from metal ions, such as Ga^{+}, Si^{+}, Si^{++}, Be^{+}, Be^{++}, Au^{+}, and Au^{++} or gaseous ions, such as H^{+} and He^{+}.

20. The method of producing a mold as defined in Claim 17, wherein said pores have a diameter no larger than 100 nm.

21. The method of producing a mold as defined in Claim 18, wherein said ion beam is irradiated in such a way that the position of irradiation is within an error of ±5 nm.

22. The method of producing a mold as defined in Claim 21, wherein said pores are made at intervals of 100 nm and in any array pattern.